

## Geoheritage: Progress toward Preservation

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Table S1. Geoheritage Video and Story Maps, Aligned to the Next Generation Science Standards Earth and Space Science Disciplinary Core Ideas, with Suggested Free Resources from SERC Carlton Teach the Earth Collection

U.S. State	Title	Contents	NGSS <sup>1</sup>	Teach the Earth <sup>2</sup>
<b>Videos</b>				
Colorado	Florissant Fossil Beds	Florissant Fossil Beds National Monument's Eocene fossils and Geoheritage history	ESS1C, ESS2E	SERC Site Guide Geologic Time; InTeGrate Changing Biosphere
Illinois	Bridgeport Quarry	Palmisano Park, Chicago, an urban Geoheritage site	ESS2A, ESS3A, ESS3C	InTeGrate Changing Biosphere; MnSTEP Discovering the Effect Mining has on Land; EarthLabs A Bird's Eye View; Early Career Geoscience Faculty Illinois through Time
Illinois	Reflecting on Rock River	Rock River in Illinois and Wisconsin, known as Sinnissippi to indigenous peoples	ESS2C	MnSTEP Stream Study; MnSTEP Water Quality; MnSTEP Investigating how Terrain and Watershed are Connected
Kentucky	Kentucky's Natural Sandstone Arches	Kentucky: the eastern state with most natural sandstone arches	ESS2C	MnSTEP Investigating Erosion
Montana	The Beartooth Mountains	Bear Tooth Mountains, MT & WY, contain 4 billion years of Earth history	ESS1C, ESS3A	SERC Site Guide Geologic Time; MnSTEP Discovering the Effect Mining has on Land
New York	Tropical Seas in Ancient New York	Lester Park, NY; stromatolites indicate warmer climate, principle of faunal succession	ESS1C, ESS2E	SERC Site Guide Geologic Time; Teaching with Online Field Experiences: Living Microorganisms, Shark Bay Australia; Teaching Paleontology in the 21 <sup>st</sup> Century Fossilization Processes
New York	Volcanic Edifice at Stark's Knob	Quarry in volcanic pillow basalt; geologic volcanism in NY	ESS1C, ESS2B	SERC Site Guide Plate Tectonics
Oklahoma	Turner Falls	Geology of Turner Falls and its formation	ESS2A, ESS2C,	Curriculum for the Bioregion: How Did this Landscape Form;

			ESS3A	
Texas	Connecting Geoheritage with Curriculum Standards	Geoheritage of Texas State Parks connected with US grade 8 ESS Curriculum Standards	ESS2A, ESS3A, ESS3C	MnSTEP Investigating Earth Changes; EarthLabs A Bird's Eye View; Teaching Introductory Geoscience Courses Geologic Maps and Geologic Structures: A Texas Example
Virginia	Geoheritage of Grand Caverns	Grand Caverns' efforts to attain Geoheritage site status, LIDAR mapping, speleothems,	ESS2C, ESS3A	Teaching Introductory Geoscience Courses: Chemistry of Cave Formation; Teaching with online Field Experiences: Karst Hydrogeology: A virtual field Introduction using Google Earth and GIS
Wyoming	<i>Exploring Opportunities:</i> Rising from the Plains	Geoheritage journey across Wyoming	ESS3A	MnSTEP Discovering the Effect Mining has on Land
Kentucky	<i>Exploring Opportunities:</i> Kentucky Rock Fences	McConnell Springs and Shaker Springs, Lexington, KY	ESS2A, ESS3A, ESS3C	EarthScope ANGLE Build a Better Wall; SERC Site Guide Geologic Time; EarthLabs A Bird's Eye View
<b>StoryMaps©</b>				
Arizona	S P Mountain Field Guide	San Francisco Volcanic Field, AZ, with analogies to lunar and Martian surfaces	ESS1B, ESS2B	Mars for Earthlings: Integrating Introductory Geology with Mars Planetary Data; EarthScope ANGLE Measure a Changing Volcano
California	Geological Gems of the California State Parks	The geology of 50+ GeoGems of CA State Park system	ESS2B, ESS3B	EarthScope ANGLE Fault Models for Teaching About Plate Tectonics; Geodesy Exploring plate motion and deformation in California with GPS; EarthScope ANGLE Geologic Hazards and the Built Environment
Delaware	The Hunt for Delaware Boundary Monuments	Survey of Delaware, Boundary monuments, and the Mason-Dixon Line	ESS2C, ESS3	MnSTEP Mapping Your World
Kentucky	Camp Nelson National Monument: A Geologic Story	American Civil War camp established by Union Army	ESS3	MnSTEP Investigating how Terrain and Watershed are Connected; MnSTEP Mapping Your World; Teaching Introductory Geoscience Geology of Mammoth Cave National Park
Maine	Explore Maine Geology	260+ field localities grouped by bedrock, surficial, coastal, or other	ESS1C, ESS2A, ESS2E, ESS3A	SERC Site Guide Geologic Time; MnSTEP Discovering the Effect Mining has on Land; InTeGrate Changing Biosphere;

				Using GIS And Remote Sensing to Teach Geoscience Land Use Change in MidCoast Maine
Missouri	Katy Trail State Park	The US longest rail to trail, rural history, and geology	ESS2C, ESS3A, ESS3C	MnSTEP Investigating how Terrain and Watershed are Connected, MnSTEP Investigating Erosion, MnSTEP Discovering the Effect Mining has on Land; EarthLabs A Bird's Eye View
New Hampshire	New Hampshire Stone Wall Mapper	Stone walls, connecting landscape to culture, LiDAR interpretation	ESS3	MnSTEP Mapping Your World
Texas	Texas GeoSign Project	Geologic information signs in Texas	ESS2A, ESS3A, ESS3C	MnSTEP Investigating Earth Changes; EarthLabs A Bird's Eye View; Teaching Introductory Geoscience Courses Geologic Maps and Geologic Structures: A Texas Example
Texas	Texas Historical Imagery Viewer	10 TX state parks feature modern and historic imagery	ESS2A, ESS3A, ESS3C	MnSTEP Investigating Earth Changes; EarthLabs A Bird's Eye View; Teaching Introductory Geoscience Courses Geologic Maps and Geologic Structures: A Texas Example
Utah	Utah GeoSights	70+ GeoSights showcase UT geology by region	ESS1C, ESS2A, ESS3A	MnSTEP Discovering the Effect Mining has on Land; Teaching Sedimentary Geology Beforms to Facies to Prediction; Teaching Structural Geology Using Google Earth to Analyze Structures in SW Utah; InTeGrate Changing Biosphere
Washington	Washington 100	100 WA geosites organized by 7 provinces	ESS2B, ESS2C, ESS2E	InTeGrate Volcano Lab – Google Earth; MnSTEP Investigating how Terrain and Watershed are Connected; InTeGrate Changing Biosphere
Wyoming	Rising from the Plains: A Geologic Companion	Geologic sites and geologists of WY	ESS1C, ESS2B, ESS2E	SERC Site Guide Geologic Time; EarthScope ANGLE Fault Models for Teaching About Plate Tectonics; InTeGrate Changing Biosphere

<sup>1</sup> Next Generation Science Standards (NGSS, NGSS Lead States 2013)

website: <https://www.nextgenscience.org/>

The Earth and Space Science standards (ESS) correspond to

ESS1B Earth and the Solar System

ESS1C History of Planet Earth

ESS2A Earth Materials and Systems

ESS2B Plate Tectonics and Large-Scale Systems

ESS2C Role of Water

ESS2E Biogeology

ESS3 Earth and Human Activity

ESS3A Natural Resources

ESS3B Natural Hazards

ESS3C Human impacts on Earth Systems

<sup>2</sup> Teach the Earth portal houses free resources on Science Education Resource Center at Carlton College:

<https://serc.carleton.edu/teachearth/index.html>

Curriculum for the Bioregion: How Did this Landscape Form <https://serc.carleton.edu/bioregion/examples/51100.html>

EarthLabs A Bird's Eye View: Exploring Your Region <https://serc.carleton.edu/earthlabs/climate/3.html>

EarthScope ANGLE Build a Better Wall [https://serc.carleton.edu/ANGLE/educational\\_materials/activities/205638.html](https://serc.carleton.edu/ANGLE/educational_materials/activities/205638.html)

EarthScope ANGLE Fault Models for Teaching About Plate Tectonics

[https://serc.carleton.edu/ANGLE/educational\\_materials/activities/205287.html](https://serc.carleton.edu/ANGLE/educational_materials/activities/205287.html)

EarthScope ANGLE Geologic Hazards and the Built Environment

[https://serc.carleton.edu/ANGLE/educational\\_materials/activities/245161.html](https://serc.carleton.edu/ANGLE/educational_materials/activities/245161.html)

EarthScope ANGLE Measure a Changing Volcano

[https://serc.carleton.edu/ANGLE/educational\\_materials/resources/205776.html](https://serc.carleton.edu/ANGLE/educational_materials/resources/205776.html)

Early Career Geoscience Faculty Illinois through Time

<https://serc.carleton.edu/NAGTWorkshops/earlycareer2010/activities/45775.html>

Geodesy Exploring plate motion and deformation in California with GPS

<https://serc.carleton.edu/NAGTWorkshops/geodesy/activities/247762.html>

InTeGrate Changing Biosphere: [https://serc.carleton.edu/integrate/teaching\\_materials/biosphere/index.html](https://serc.carleton.edu/integrate/teaching_materials/biosphere/index.html)

InTeGrate Volcano Lab – Google Earth

[https://serc.carleton.edu/integrate/workshops/online\\_learning/activities/178769.html](https://serc.carleton.edu/integrate/workshops/online_learning/activities/178769.html)

Mars for Earthlings: Integrating Introductory Geology with Mars Planetary Data

<https://serc.carleton.edu/marsforearthlings/index.html>

MnSTEP Discovering the Effect Mining has on Land <https://serc.carleton.edu/sp/mnstep/activities/36024.html>

MnSTEP Investigating Erosion <https://serc.carleton.edu/sp/mnstep/activities/36024.html>

MnSTEP Investigating how terrain and watershed are connected

<https://serc.carleton.edu/sp/mnstep/activities/26545.html>

Mn STEP Investigating the Earth Changes – Looking at Weathering and Erosion:

<https://serc.carleton.edu/sp/mnstep/activities/26353.html>

MnSTEP Mapping Your World <https://serc.carleton.edu/sp/mnstep/activities/19863.html>

MnSTEP Stream Study [https://serc.carleton.edu/ANGLE/educational\\_materials/activities/205638.html](https://serc.carleton.edu/ANGLE/educational_materials/activities/205638.html)

MnSTEP Water Quality

<https://serc.carleton.edu/sp/mnstep/activities/36024.html>

SERC Site Guide: Geologic Time: [https://serc.carleton.edu/serc/site\\_guides/geologic\\_time.html](https://serc.carleton.edu/serc/site_guides/geologic_time.html)

SERC Site Guide: Plate Tectonics: [https://serc.carleton.edu/serc/site\\_guides/plate\\_tectonics.html](https://serc.carleton.edu/serc/site_guides/plate_tectonics.html)

Teaching Introductory Geoscience Courses Geologic Maps and Geologic Structures: A Texas Example

<https://serc.carleton.edu/NAGTWorkshops/intro/activities/23569.html>

Teaching Introductory Geoscience Courses: Chemistry of Cave Formation

<https://serc.carleton.edu/NAGTWorkshops/intro/activities/186122.html>

Teaching Introductory Geoscience Courses Geology of Mammoth Cave National Park

<https://serc.carleton.edu/NAGTWorkshops/intro/activities/186125.html>

Teaching Introductory Geoscience Courses Geology of Washington

<https://serc.carleton.edu/NAGTWorkshops/intro/virtual2014/courses/79855.html>

Teaching Paleontology in the 21<sup>st</sup> Century Fossilization Processes

<https://serc.carleton.edu/NAGTWorkshops/paleo/activities/33130.html>

Teaching Sedimentary Geology Bedforms to Facies to Prediction: Walther's Law and Sequence Stratigraphic Analysis, Blackhawk Formation, UT <https://serc.carleton.edu/NAGTWorkshops/sedimentary/activities/14228.html>

Teaching Structural Geology Using Google Earth to Analyze Structures in Southwest Utah

<https://serc.carleton.edu/NAGTWorkshops/structure/SGT2012/activities/65763.html>

Teaching with Online Field Experiences: Karst Hydrogeology

[https://serc.carleton.edu/NAGTWorkshops/online\\_field/activities/237039.html](https://serc.carleton.edu/NAGTWorkshops/online_field/activities/237039.html)

Teaching with Online Field Experiences, Living Microorganisms Shark Bay, Australia:

[https://serc.carleton.edu/NAGTWorkshops/online\\_field/activities/237192.html](https://serc.carleton.edu/NAGTWorkshops/online_field/activities/237192.html)

Using GIS and Remote Sensing to Teach Geoscience Land Use Change in MidCoast Maine

<https://serc.carleton.edu/NAGTWorkshops/gis/activities2/48014.html>